

SUPPLIED FOR THE PUBLIC SERVICE

ADMIRALTY
WEATHER MANUAL
1938

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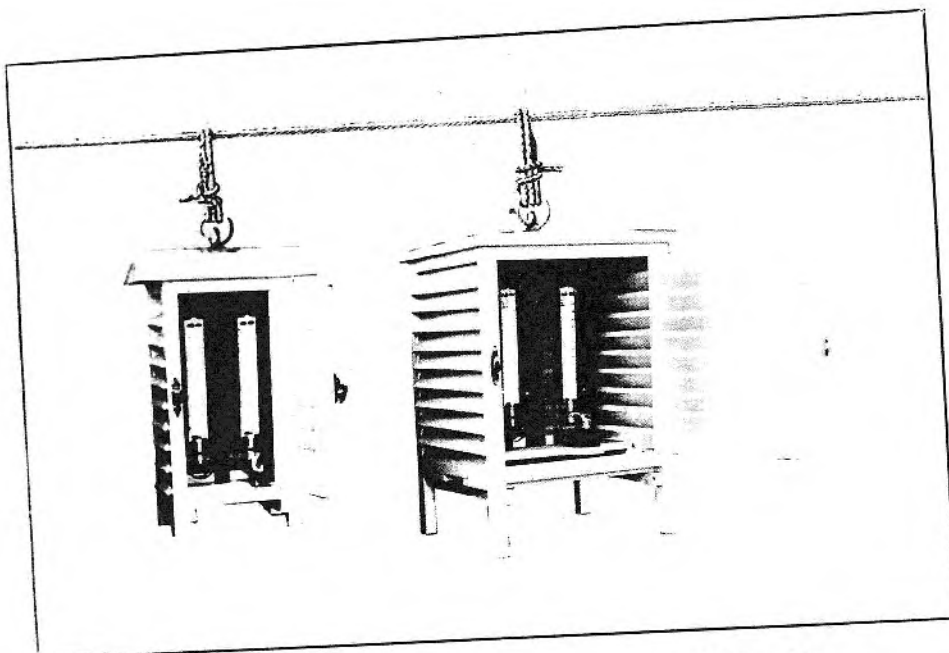
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Price 10s. 6d. net

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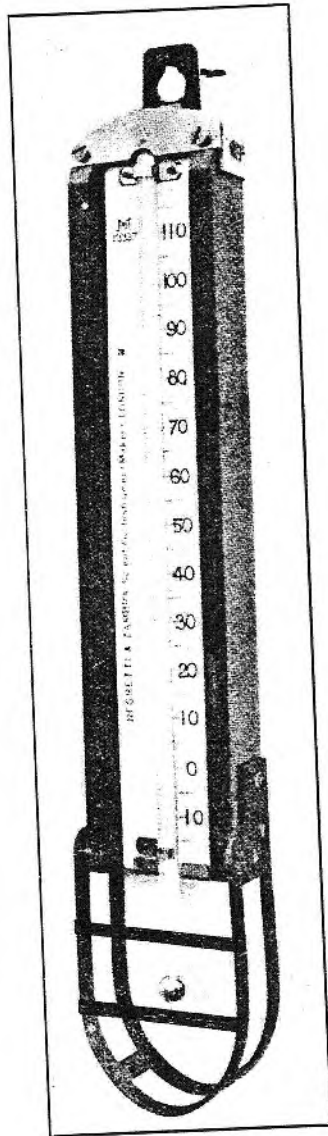


Mounted, with
Thermometer Protectors.

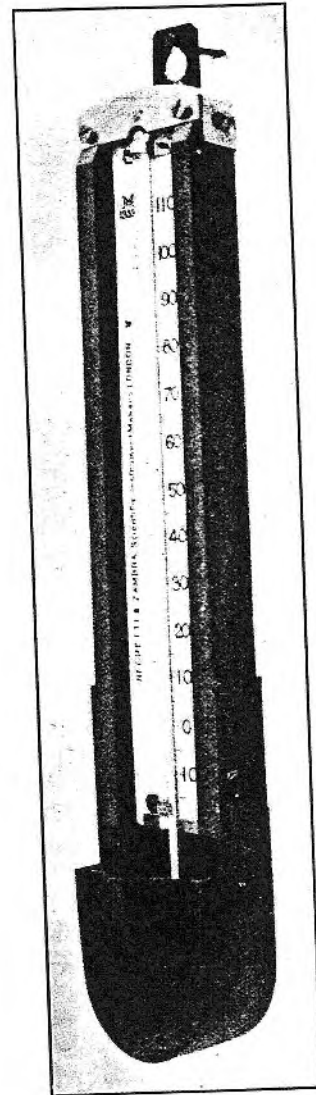
Portable, with
Thermometer Protectors.

FIG. 6.—SHIP'S THERMOMETER SCREENS.

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AIR PROTECTOR.



SEA PROTECTOR.

FIG. 5.—MAHOGANY PROTECTORS FOR THERMOMETERS.

adjusting screws with milled heads being fitted; by turning the milled head the pen-arm is raised or lowered.

The dimensions and weights of the parts of the twin-pen thermograph are as follows:—

Sensitive elements of Thermograph (Twin Pen)—

- (a) Weight of 2 bulbs, water trough (empty) and connection .. $8\frac{3}{4}$ lbs. (approx.)
- (b) Overall dimensions including water trough—
- | | | |
|---------------------------------|----|---------------------|
| Height | .. | 10 inches. |
| Length | .. | 6 .. |
| Breadth | .. | $14\frac{1}{2}$.. |
| Weight of capillary per foot .. | .. | $5\frac{1}{4}$ ozs. |

Recorder of Thermograph—

- (a) Weight 24 lbs. (approx.)
- (b) Overall dimensions:—
- | | | |
|-----------------|----|--------------------|
| Height | .. | 9 inches. |
| Length | .. | $14\frac{1}{2}$.. |
| Breadth | .. | $7\frac{1}{2}$.. |

Care of the Distant Reading Thermograph.—The notes on the care and upkeep of recording instruments (page 35) apply to the recorder of the distant reading thermograph except where otherwise stated.

The bulbs are made of steel, nickel plated and then copper plated to protect them from corrosion. It is advisable to examine the bulbs carefully every two months to see if the copper plating has cracked in any way, as this would lead to corrosion of the bulb. The bulbs must not be scraped. The steel capillary is covered with a tube of copper brazed at both ends. In order to eliminate the possibility of corrosion lead tubing is drawn over the copper throughout its length. The capillary tubing should be examined periodically for defects in the covering. On no account must the bulb be subjected to a temperature in excess of the maximum shown on the chart of the recorder, and the tube should never be soldered. Any damage to the bulbs or capillary tubing which permits an escape of mercury necessitates return of the instrument to the makers.

The muslin and wick on the wet bulb should be changed weekly, or more often if there is reason to believe that salt spray has blown over it. Distilled water should be used for moistening the wet bulb.

SEA TEMPERATURE.

The Sea Thermometer.—An ordinary thermometer Pattern No. 504, as used in the portable screen, Pattern No. 539, but fitted with a sea protector (Fig. 5), is used for taking the temperature of the sea surface. The sea protector, Pattern No. 542, is similar to the air

protector Pattern No. 541 except that the metal guard round the bulb is in the form of a cup which forms a reservoir for retaining a small quantity of sea water around the bulb while the temperature is being read. The thermometer should not be removed from the protector once it has been fitted.

To make an observation of the sea-surface temperature, a sample of water should be drawn in a canvas bucket, diameter not less than 5 inches, from over the ship's side forward of all outlets. Care should be taken that the sample of water is from the surface; the bucket should not be allowed to sink and so collect water which may not be at the surface temperature (*see* page 124). The thermometer bulb and protector should be held for a minute or so in the first sample drawn, then removed, the water contained in the metal guard being poured back into the sample, and the sample thrown over the side. The object of this procedure is to bring the thermometer and the bucket approximately to the temperature of the sea surface. A second sample of sea water should then be taken in the same manner as the first; the thermometer bulb and metal cup should be dipped in this sample and the temperature read as soon as it becomes steady. It is essential that the bulb of the instrument should be under water at the time of reading; hence the reservoir around the bulb. If it is not covered, evaporation will take place from the drops of water adhering to it and it will tend to act as a wet-bulb thermometer and give a reading below the actual temperature of the sea water.

If a motor boat is used for work in shallow water the thermometer and protector might be lowered from the bows directly into the water (just low enough to fill the cup of the protector) care being taken to shield the thermometer from direct sunshine. The temperature of the second sample should be taken. If this direct method is used a note should be made against the observation in the meteorological log.

The canvas bucket should be stowed in the shade when not in use.

The Distant Reading Sea Thermograph.—A Distant Reading Sea Thermograph of similar construction to the Distant Reading Thermograph is supplied to some ships. The recorder is placed in the chart house and the bulb is fitted in the condenser intake or in a special recess in the ship's side constructed to permit a flow of sea water past the bulb. The temperature recorded is the temperature of the sea at a depth of several feet, which may differ by a few degrees from the actual sea-surface temperature, especially in calm weather. The thermograph indicates very conveniently, however, a change from a warmer to a colder current of water or *vice versa*, which is of importance, for instance, in forecasting visibility at sea.

WIND SPEED AND DIRECTION.

The instruments supplied to H.M. Ships for recording the speed and direction of the wind, record the relative wind only. To obtain